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MAINTAINING TASK BEHAVIOR IN A LITERACY PROGRAM UNDER VARIOUS CONDITIONS OF REINFORCEMENT.

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DESCRIPTORS- *MOTIVATION, *MOTIVATION TECHNIQUES, *STUDENT MOTIVATION, *READING ACHIEVEMENT, ATTENTION CONTROL, ELEMENTARY GRADES, *TASK PERFORMANCE, UNIVERSITY OF MICHIGAN,

THE WORK OUTPUT OF RETARDED READERS USING A PROGRAMED LITERACY CURRICULUM WAS OBSERVED UNDER VARIOUS CONDITIONS OF REINFORCEMENT IN A CONTROLLED CLASSROOM. TASK BEHAVIOR WAS FOLLOWED BY CONDITIONS OF NO CONSEQUENCE, TEACHER PRAISE, A WORK-BREAK CONSEQUENCE, A MONETARY CONSEQUENCE, AND FEEDBACK ON AMOUNT OF WORK RELATIVE TO PREVIOUS WORK. SIX DIFFERENT EXPERIMENTS WERE CONDUCTED WITH SUBJECTS RANGING IN AGE FROM 70 MONTHS TO 12 YEARS 7 MONTHS. THE EXTINCTION OF TASK BEHAVIOR TENDED TO OCCUR UNDER CONDITIONS OF NO CONSEQUENCE AND OF TEACHER PRAISE. CONDITIONS OF MONETARY CONSEQUENCE AND OF FEEDBACK ON PROGRESS RESULTED IN HIGH, SUSTAINED RATES OF WORK BEHAVIOR. DETAILED RESULTS ARE REPORTED IN TABLES AND FIGURES. (AUTHOR)

Maintaining Task Behavior in a Literacy Program under Various Conditions of Reinforcement[1]

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The work output of retarded readers using a programmed literacy curriculum was observed under various conditions of reinforcement in a controlled classroom. Task behavior was followed by conditions of no consequence, teacher praise, a work-break consequence, a monetary consequence and feedback on amount of work (relative to previous work). Extinction of task behavior tended to occur under conditions of no consequence and of teacher praise. Conditions of monetary consequence and of feedback on progress resulted in high, sustained rates of work behavior.

Maintenance of task behavior is a chronic problem in classrooms and clinics. Common pedagogic terms for classifying the problem are "inattention," "lack of motivation," and "undisciplined behavior."

Techniques for increasing task behavior include teacher praise, withholding punishment, assigning grades and inducing a commitment by means of a contract. This paper reports the results of several experiments designed to assess the effectiveness of such techniques and of other reinforcing conditions in a controlled environment, i.e., in classrooms wherein instructional materials and teacher behaviors are controlled and wherein the dependent variable is rate of work.

The problem of maintaining task behavior arose during the validation of a programmed language arts curriculum.[2] The program, designed for use in first grade classrooms and in clinics, consists of 16 books containing some 17,000 tasks, scripts (or tapes) for teacher participation, and a programmed manual for training the teacher in his role. The program trains reading, writing, listening, and speaking from the grapheme and phoneme level to independent reading. The learning tasks were constructed iteratively, within classrooms, until a rate of success above 95% was achieved.

The teacher's role is that of classroom manager. He establishes one or two rules and enforces them absolutely. Student behaviors not covered by the rules are followed by no consequence other than being noticed. Children select their materials from those available and pace themselves.

Within these limits, they are free to work or not to work. It should be noted that most of the teaching frames are of the discrimination type, puzzle-like, and hold the interest of most children.

Rate of work in normal classrooms under the above conditions tends to be high. However, teacher reports of extinction curves for isolated cases were confirmed by similar data on a substantial proportion of clinic cases.

In an attempt to resolve the problem of maintaining task behavior, a series of three experiments was carried out. The independent variable in each was none, one or a combination of consequences following task behavior. The first two experiments demonstrate the results of no consequence and of a monetary consequence precisely contingent upon amount of task behavior. The next three experiments report results under conditions approximating each of these extremes. The last study reports the effect of a non-monetary consequence feasible for school use.

Experiment 1: No Consequence

Procedure. Ss were six children designated "non-verbal, first-grade failures" by their school principal (Table 1). Ages ranged from 70 months to 98 months. Reading deficiencies ranged from two months to seven months. Classes met one hour per day, four days per week for ten weeks. Conditions and materials were as described above. No consequence followed work behavior. One rule,"No talking during independent work," was enforced consistently by saying, "The rule is no talking."

Insert Table 1 about here

Results. The cumulative curves depicting rate of work (Figure 1) characteristically demonstrate extinction of task behavior. Reduced outputs were usually accompanied by emotional behaviors.

Insert Figure 1 about here

The gains in reading test scores (Table 1) are misleading. In this program, use of a survey test is appropriate only when the learner has completed the last book, *Word Attack and Comprehension* (about 14 weeks, 17,000 responses, in clinical use under optimal conditions; see Figure 2A).

Mastery tests for particular components, e.g., letter discrimination, are used prior to independent reading. These children completed from 2% to 10% of the total program.

Discussion. The condition of no consequence following task behavior results in a low rate of work, rapid extinction of task behavior and a substantial amount of infantile attack and withdrawal behavior.

Experiment 2: Monetary Consequence, Task Contingent

Procedure: Ss were six children taken in order from a waiting list and assigned to a class taught by the teacher used in Experiment 1. Ages ranged from 101 months to 136 months. Reading deficiencies ranged from 1.1 years to 2.7 years. Children were described by their teachers as hyperactive (2), anxious (1), passive-aggressive (2) aggressive, acting-out (1: classroom for disturbed).

Insert Table 2 about here

Classes were held for 45 min., four days per week, with the same physical arrangements and materials as before. Two rules obtained, "No talking during independent work," enforced as above, and "No disturbing others," enforced by exclusion for the remainder of the hour. Immediately following the class, correct responses were totaled, in the presence of the child, and a monetary pay-off occurred. The child was paid at a rate of 1 mill per response by the office secretary.

Results. Rate of work began at 100 responses per session and reached a mean of 430 responses per session during the last four meetings (Figure 2). All curves are accelerating positively by Session 16. Proportion of time spent

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Insert Figure 2 about here

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in task behavior exceeded 90% on three of the last five sessions. (Some of the daily fluctuation in these curves is accounted for by the use of teacher-controlled performance tasks on alternate days. Performance tasks included oral and silent reading and certain teacher administered concept formation activities. While this administrative procedure was efficient, it reduced the opportunity for a high rate of work on those days. Responses on performance tasks are not included in the work curves since they were teacher directed.)

Discussion. Relative to the absence of gains in reading after six weeks (Tables 1 and 2), data shown in Figure 2A is reassuring. Five of the six Ss continued treatment through 14 weeks by which time they had completed the

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Insert Figure 2A about here

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program. Whereas mean initial deficiency was two grades and remained so after six weeks, mean final deficiency is slightly less than .6 grades or an achievement level of grade 4.0, the upper limit of the program as now constituted.

The condition of a monetary consequence contingent upon task behavior was clearly effective in producing a high rate of work and systematic achievement. There was virtually no rule-testing after ten sessions with this group of relatively disturbed children. There was, however, some evidence of a child-mother consipiracy with regard to S F. His frequent absences, with excellent reasons provided by his mother, jeopardized his progress. A rule was established: absence without prior notification of the instructor will result in dismissal. A reenrollment procedure must then be carried out. The rule was tested twice, enforced, and absences ceased.

Subjective evidence during the course of the experiment suggested that, while the apparent reinforcer was money, the effective reinforcer might well be feedback information on progress. For example, one child received $ .26 one day and $ .05 the next. He said, wonderingly, "H-m-m. I guess I didn't work very hard today." It was as though he had been previously unaware of his role as a producer.

If feedback is an effective reinforcer, other non-monetary procedures might be as powerful as the money pay-off. A non-monetary procedure might be feasible for public school use. A test of this hypothesis is reported in Experiment 6, described later in this report.

Experiment 3: Work Contract with Teacher Praise

Procedure. Ss were six children referred by their school principals (Table 3, A-F). Three were from special education classes, two read approximately one year below grade placement and one read at grade level. The boy who read at grade level was not performing at that level in school and was described as a behavior problem.

Insert Table 3 about here

The classroom was approximately 20' x 40'. Six small tables were in one end and several larger tables were in the other. The class work area was in the end containing the small tables.

Conditions were similar to those described for Experiments 1 and 2. However, children were asked to complete small amounts of work. When work "contracts" were completed, the child brought his work to the teacher who smiled

and made comments such as, "Good! You finished. Would you like to do some more?" If the child agreed to do more, the next contract was set. If the child did not agree to do more, he was instructed to go to a non-work area.

Rules were enforced by asking "What is the rule?" After the children left each day, the amount of work completed by each child was plotted on cumulative curves which were displayed on a bulletin board in the classroom.

Results. Work curves are shown in Figure 3. Absences are not indicated on the graph, which accounts for the differences in the number of sessions shown for the several children. Ss A and B worked slowly and steadily; Ss D, E and F slowed down, and S C stopped, then went back to work; S E had almost completely stopped prior to Session 10.

Discussion. The acceleration in S E's curve occurred after the student was allowed to skip exercises if he could read the summaries at the end of exercises. After completing the exercises where that was possible, he stopped

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Insert Figure 3 about here

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working, whereupon he was tested (Session 18) and graduated. He was then reading above grade level. Until Session 18, curve C has the general appearance of several small extinction curves superimposed upon a larger extinction curve. The relatively large number of responses in Session 7 occurred as the child stayed beyond the class session to complete a rather large program book. A similar event occurred in Session 13. The acceleration following Session 18 occurred when Ss D and F were absent often and E had graduated, reducing the effective class size to three students. Most of S C's work during these sessions was on teacher directed and teacher paced exercises.

Experiment 4: Work Contract with No Consequence, Work-break Consequence and with Monetary Consequence

Procedure. Ss were six children; four of them, A, B, C and D, had taken part in Experiment 3; two of them (G and H) were new, replacing the child who had graduated and one child who was not re-enrolled for the six week period (Table 3). Classes met one hour per day, four days per week for six weeks in the same classroom used in Experiment 3.

No rules were used; the teacher allowed movement, talking, etc. and requested halts or reductions in non-task activity whenever he judged it necessary. Upon completion of work contract or a work-break, the child received the option of another contract or a work-break. Beginning with the 10th session, the option was between another contract or a maximum break of five minutes; two consecutive breaks were not allowed. Beginning with Session 15,

pennies were given to the children upon completion of each contract. The amount per correct response was not specified to the child. He might receive one penny per response upon completion of one contract, one penny per two responses on the next. However, once the ratio of correct responses to pennies was increased, it was not decreased. The maximum ratio was one penny to four responses. Cumulative curves of each child's performance were plotted after class and displayed in the classroom.

Results. Work curves are shown in Figure 4. The breaks in curves which occur just before procedure changes are due to absences. The absence may have occurred any time the particular procedure was in effect; however, curves are

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Insert Figure 4 about here

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aligned at the beginning of each condition in order to facilitate representation of procedure changes.

There is no general decline in work (and of teacher-paced acceleration). However, prior to the introduction of a "work-break" consequence, there is a deceleration of the four upper curves.

Following the introduction of "work-break" consequences, curves C, D, G and H accelerated and then decelerated. Curves A and B show no change; the children rarely came in contact with the "work-break" consequences partly because of low frequency of completing contracts and partly because they occasionally exceeded the time allotted for the break.

Five of the curves show acceleration after the introduction of monetary consequences. The acceleration in curve C is quite noticeable.

Discussion. At the beginning of Session 17, S G contracted for a very large amount of work in spite of the teacher's reminder that the entire contract must be completed before payment. The student did relatively little work during Session 17, less during Session 18, and even less during Session 19. The contract was completed during the early part of Session 20, smaller contracts were made thereafter and more work was accomplished. S G initiated several interactions with S D during Sessions 17, 18 and 19.

Ss A and B did little with the money except to ask what it was for. After Session 17 the teacher suggested to the parents of the two children that they encourage the children to spend some of the money immediately after class. The subsequent acceleration in the curve for child B may have been due to a

resulting increase in the value of the money to the child. There is also a very small increase in the amount of work done by child A, possibly due to fewer opportunities to interact with child B who was working more than before.

Experiment 5: Work Contract with Monetary Consequence

Procedure. Ss were eight children, A, B, C, D, G, H, I, J, described more fully in Table 3. Child B was in a different class operated under the conditions described for Experiment 2. Children I and J joined the class after having been a two-person class for a six week period. Child C was scheduled to attend the class only on Tuesdays and Thursdays. Class was held in a small classroom approximately 12' x 15'; this classroom was used in all experiments except the third and fourth.

The class was taught part of the time by a male teacher and part of the time by a female teacher.

The work-to-payment ratio was not stated to the children. Beginning with Session 11, the ratio was systematically increased. In Session 11 it was 5/1, in Sessions 12-15 it was 10/1, in Sessions 16-19 it was 15/1, in Session 20 it was 20/1, in Session 21 it was 25/1. There was no monetary consequence during Sessions 22-24. Students graphed their work output at the end of each session throughout the experiment.

Results. The cumulative work curves are shown in Figure 5. Absences are not indicated on the graphs. The performance was maintained throughout the experiment. There is some deceleration in curves J and H as the ratio of correct responses per penny was increased but the other curves are maintained or even accelerate at the higher ratios.

Insert Figure 5 about here

Curves A, D, I, and J show no noticeable effect on the first day monetary consequences were removed. Ss H, G, and C show an increase on the first day. C, D, I and G show a decline on the last day whereas H shows a large increase and J a small increase.

Discussion. There was little time after the removal of monetary consequence in which to observe effects. The ratio of correct responses/penny had been increased to make the transition to no monetary consequence less dramatic and was apparently successful.

Experiment 6

As outlined above (Experiment 2: Discussion), if the consequence, feedback of information, is the effective reinforcer in Experiment 2, other, non-monetary, kinds of information may maintain task behavior. The simplest of these kinds of feedback appears to be a report of the number of tasks completed, perhaps charted in away which will allow a daily and weekly comparison of output.

Procedure. Ss were 13 children referred by their principals for treatment. Six were placed in Group I with a teacher experienced in operating a controlled environment. Ages ranged from 8-1 to 11-0. Reading deficiencies ranged from .5 grades to 2.3 grades (Table 4). One boy, F, was classified as retarded with special room placement. Band E are twins.

Insert Table 4 about here

Seven boys were placed in Group II with a teacher recently trained in operating the room. Ages ranged from 9-1 to 12-7. Reading deficiencies ranged from 1.9 grades to 4.5 grades. Two boys, were classified as retarded with special room placement, F (WISC IQ, 82) and G (WISC IQ, 69).

Materials and procedures were those of Experiment 2. The two rules regarding talking or disturbing others were in effect. At the end of each class, correct responses were counted, in the presence of each child, and he charted his total "points" on a daily bar graph and a weekly cumulative bar graph. No comment was made by the teacher.

Results. With the exception of four Ss in Group II (Figures 6 and 7), the response curves are remarkably similar to those of Experiment 2. The exceptions are S G, (I.Q., 69) whose rate is slower than the others, but similar in configuration, and Ss A, B and C. A and B appeared to be competing with each other. S C missed the second week due to a family vacation and worked very rapidly when he returned.

Discussion. Observers reported changes in classroom behavior similar to those reported in Experiment 2. It would appear, on the basis of similarity of work outputs, that the "point procedure" is fully as effective as the montary consequence in maintaining task behavior.

Discussion

The data show considerable orderliness: changes in the consequences of performance influenced the amount of work performed.

The lack of a consequence following task behavior resulted in a low rate of work and a substantial amount of infantile behavior (Experiment 1). Within three weeks, this class gave the appearance of a room of disturbed children. The teacher remained monolithic throughout, responding appropriately to each new crisis. Nevertheless, task behavior extinguished for at least three of the children. Under the condition of monetary consequence, on the other hand (Experiment 2), all children had reached a high rate of work within three weeks, the proportion of working time reached or exceeded 90%, and there was virtually no rule testing.

In Experiment 3 the consequences were similar to those found in many classrooms. When children completed assignments, they were praised. Differences were primarily in the consequences of non-task behavior. Contrary to practices in most classrooms, non-task behavior which did not violate a limited number (two) of specific rules was ignored by the teacher. Prior work at the Reading Improvement Service had led us to believe that imposing other controls on non-task behavior produced a quieter but, if anything, a less productive classroom.

Instituting small assignments and explicit praise was an attempt to increase productivity. The amount of work done was higher than in Experiment 1, but the classes were not sufficiently comparable to be able to state with confidence the reasons for the difference. Rather than attempt to do further experiments to determine whether the praise, the assignments, the differences in the classrooms, the difference in the children, etc., were affecting the apparent differences in productivity, attempts were made in Experiment 4 and 5 to increase productivity further.

The reduction in teacher praise in Experiment 4 was a result of the change in teachers rather than a change in plans. We did not measure how much less praise was used. For example, we did not try to discover if the first teacher's wide smile was twice the praise value of the second teacher's half smile but contented ourselves with the conclusion that there was less praise.

The data from Experiment 4 show very definite changes in performance following the changes in consequences; "work-break" consequences were followed

by gradual increase than a gradual decrease in performance; the introduction of monetary consequences was followed by a definite and sustained increase.

The data also show that a particular consequence does not work in the same way for all students; the "work-break" consequence in Experiment 4 had no noticeable influence on the performance of Ss A and B (special room children); the monetary consequence had little, if any, influence on the performance of S A.

Differences in effectiveness of a particular consequence indicate only differences in effectiveness of a particular consequence. They do not indicate that the consequences of performance do not influence performance. Work-break consequences would not be expected to immediately influence the performance of a student unaccustomed to using money. Ss A and B rarely took work-breaks and made less use of money than did the other children.

There were monetary consequences throughout Experiment 5 except for the last three sessions. Removal of the money was followed by a range of effects and was not continued long enough to determine whether or not the performance would continue without it. However, the children were already routinely graphing their results before counting their money.

There were many differences in the series of classes other than the planned changes in consequences:the children aged, the teachers changed, relationships among children changed, which children were in the class changed, the size of the classroom changed, the particular reading tasks changed, the weather changed, etc. In spite of those changes, the changes in performance measures following changes in consequence occurred closely enough in time and changed in ways which lead us to the conclusion that conditions were controlled sufficiently for us to collect orderly data. The experiments could not be replicated exactly. Many things happened which we could not be assured would happen again. However, it seems likely that enough of the major variables were controlled so that the same planned changes would lead to essentially the same data.

The procedures used were effective in increasing the productivity of the students. The increase in productivity could have paid for the experiment. That is, the cost of monetary consequences was less than the cost would have been to keep the students in the program long enough to accomplish as much at lower rates of production. That is not to say that monetary consequences are necessary in order to attain the higher production; Experiment 6 indicates that they are not.

In Experiment 6, conditions of Experiment 2 were replicated, with one exception. Instead of a money pay-off following each session, there was a "point" pay-off. Children simply charted their dav's output. The results under these conditions are not different from those under the money pay-off condition.

Summary

The work output of retarded readers using a programmed literacy curriculum was observed under various conditions of reinforcement in a controlled classroom. Task behavior was followed by conditions of no consequence, teacher praise, a work-break consequence, a monetary consequence and feedback on amount of work (relative to previous work). Extinction of task behavior tended to occur under conditions of no consequence and of teacher praise. Conditions of monetarv consequence and of feedback on progress resulted in high, sustained rates of work behavior.

Conclusion

The solution to the problem of maintaining task behavior was found to be a simple one. Providing retarded readers with feedback on progress was sufficient to keep them performing at high rates. We had, in effect, trained them to perform desired classroom behavior by an arbitrary, but systematic, point system. The points replaced money within and between experimental groups with no appreciable change in task-relevant behaviors.

Footnotes

[1]The research reported herein was performed in part under Contract OEC-3-6-061784-0508 with the U. S. Department of Health, Education, and Welfare, Office of Education, under the provisions of P. L. 83-531, Cooperative Research, and the provisions of Title VI, P. L. 85-864, as amended. This research report is one of several which have been submitted to the Office of Education as *Studies in language and language behavior*, Progress Report V, September 1, 1967.

[2]Smith, D. E. P. (Ed.) *Michigan language program*. Ann Arbor: Ann Arbor Publishers, 1964.

Table 1

Age, Reading Achievement and Work Output

under Conditions of No Consequence

for Task Relevant Behavior

Subject	Sex	Age (mos)	Grade Place	Achievement* Pre	Post	Treatment Interval (yrs)	Change (yr)	No. of Sessions	Responses
A	M	98	1.9	1.8	-	.35	-	20	1650
B	M	70	1.9	1.3	1.8	.4	+0.5	26	1100
C	M	88	1.9	2.0	2.8	.4	+0.8	22	800
D	F	71	1.9	1.3	1.7	.1	+0.4	7	500
E	M	70	1.9	1.3	1.4	.4	+0.1	26	600
F	F	66	1.9	1.8	1.8	.4	0.0	27	350

*Grade Level: Gates Primary: Word Recognition

Table 2

Age, Reading Achievement and Work Output

under Conditions of a Monetary Consequence

Contingent upon Number of Tasks

Completed Correctly

Subject	Sex	Age (mos)	Grade Place	Achievement* Pre	Post	Treatment Interval (yrs)	Change (yr)	No. of Sessions	Responses
A	M	117	4.6	2.0	2.0	.15	0.0	24	7000
B	M	124	4.6	2.7	2.9	.15	+0.2	24	6400
C	M	136	5.6	2.9	2.9	.15	0.0	20	5775
D	M	112	4.6	2.6	2.3	.15	-0.3	23	4600
E	F	101	3.6	2.5	2.3	.15	-0.2	18	3325
F	M	114	3.6	2.0	2.4	.15	+0.4	16	3400

*Grade Level: Gates Primary: Word Recognition

Table 3

Characteristics and Progress of Children
under Various Treatment Conditions

Exp.	Condition	Subj.	Exper. 3 4 5	Sex	Age (mos)	Grade Place	Achievement Pre	Achievement Post	Treatment Interval (yrs)	Change (yrs)	No. of Sessions	Responses
3	Contract: --praise	A	x x x	F	106	Spec.	1.4*	1.3	.45	-0.1	60	1550
		B	x x x	F	102	Spec.	1.0***	1.4	.45	+0.4	68	3775
		C	x x x	M	120	Spec.	1.7**	2.7	.45	+1.0	55	6875
		D	x x x	M	110	3.0	2.0**	3.0	.45	+1.0	49	5425
		E	x - -	M	97	3.0	3.3**	4.0	.15	+0.7	20	1125
		F	x - -	M	99	4.7	2.1**	1.9	.15	-0.2	17	1900
4	**Contract --no conseq. --work-break --money**	G	- x x	M	103	3.5	1.7*	2.5	.30	+0.8	38	7100
		H	- x x	M	111	2.7	2.6*	2.7	.30	+0.1	35	8800
5	Contract: --money	I	- - x	M	127	4.5	2.1*	2.9	.30	+0.8	44	14,725
		J	- - x	M	141	5.5	1.9*	1.9	.30	0.0	44	9,400

*Wide Range
**Gates Primary
***Gates McGinitie

Table 4

Age, Reading Achievement and Work Output under Conditions of Feedback on Task Behavior

	Subject	Sex	Age (mos)	Grade Place	Achievement* Pre	Achievement* Post	Treatment Interval (yrs)	Change (yr)	No. of Sessions	Responses
I	A	M	11-0	4.9	2.6	3.5	.15	+.9	21	5750
	B	M	8-2	2.9	2.9	3.7	.15	+.8	21	5725
	C	M	10-4	3.9	2.0	2.0	.15	.0	19	5150
	D	F	8-1	2.9	2.0	2.3	.15	+.3	15	2775
	E	M	8-2	2.9	2.4	2.4	.15	.0	21	3800
	F	M	8-10	2.9	1.5	1.4	.15	-.1	18	2750
II	A	M	12-7	6.9	2.9	3.2	.15	+.3	17	8175
	B	M	12-0	5.9	2.5	3.3	.15	+.8	20	9875
	C	M	11-9	6.9	2.8	2.5	.15	-.3	13	4925
	D	M	10-8	4.9	2.5	2.5	.15	.0	18	5425
	E	M	10-2	4.9	3.0	2.3	.15	-.7	21	4700
	F	M	11-8	5.9	1.4	1.4	.15	.0	16	2650
	G	M	9-1	3.9	1.4	1.3	.15	-.1	21	3475

*Gates-McGinitie Primary C.

Figure Captions

Fig. 1. Work output of retarded readers under conditions of self-selection, self-pacing and no consequence.

Fig. 2. Work output of retarded readers under conditions of self-selection, self-pacing, and a monetary consequence.

Fig. 2A. Reading achievement of clinic referrals after two periods of treatment with programmed materials in a controlled environment.

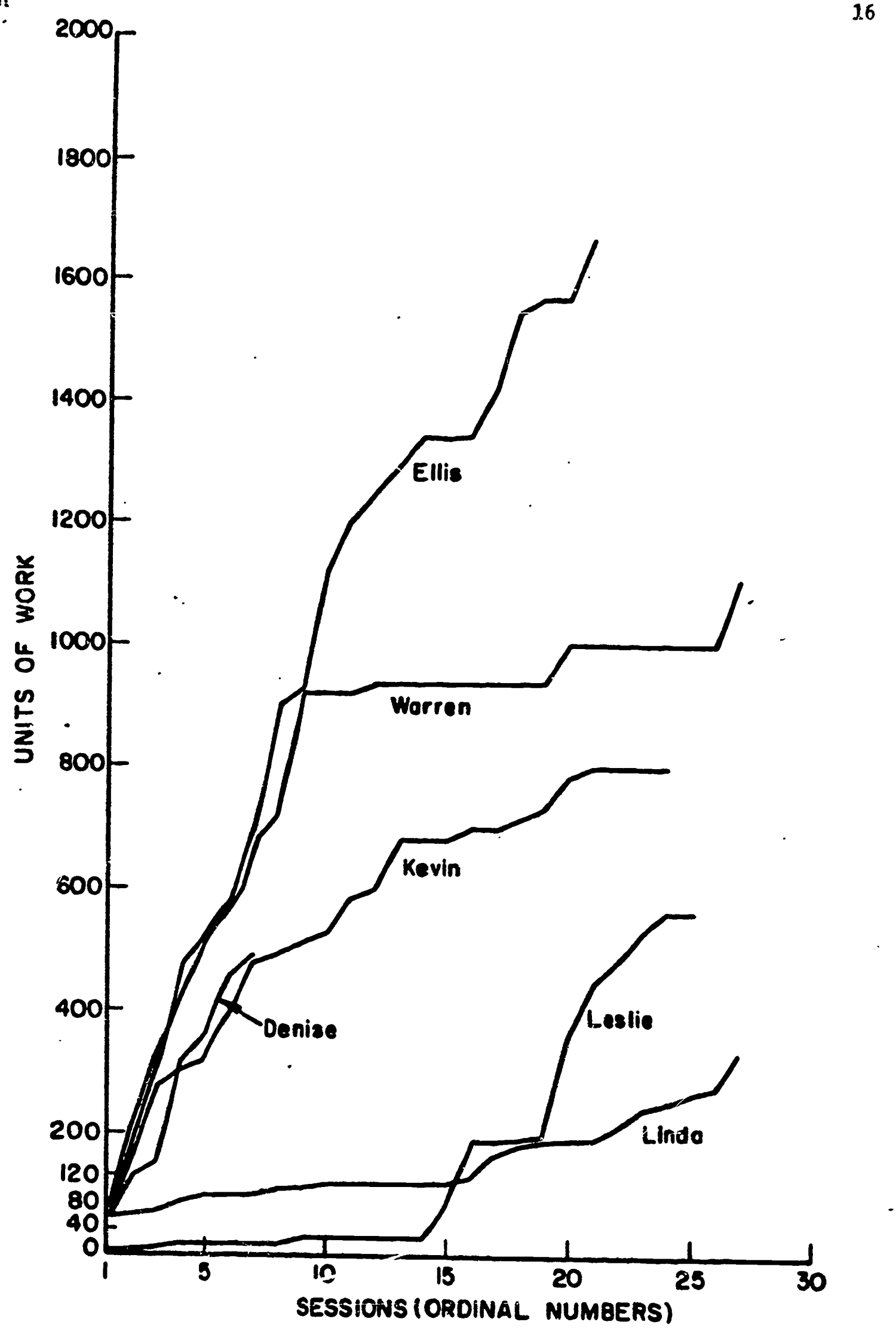
Fig. 3. Work output of retarded readers under conditions of work contracts with teacher praise.

Fig. 4. Work output of retarded readers under conditions of work contract with no consequence, with work-break consequence, and with monetary consequence.

Fig. 5. Work output of retarded readers under conditions of work contract with monetary consequence and work contract with no monetary consequence.

Fig. 6. Work output of retarded readers under conditions of self-selection, self-pacing, and immediate feedback on performance quantity (Class I).

Fig. 7. Work output of retarded readers under conditions of self-selection, self-pacing, and immediate feedback on performance quantity (Class II).


2000
1800
1600
1400
1200
1000
800
600
400
200
120
80
40
0
UNITS OF WORK
Ellis
Warren
Kevin
Denise
Leslie
Linda
1
5
10
15
20
25
30
SESSIONS (ORDINAL NUMBERS)

484

Figure 1

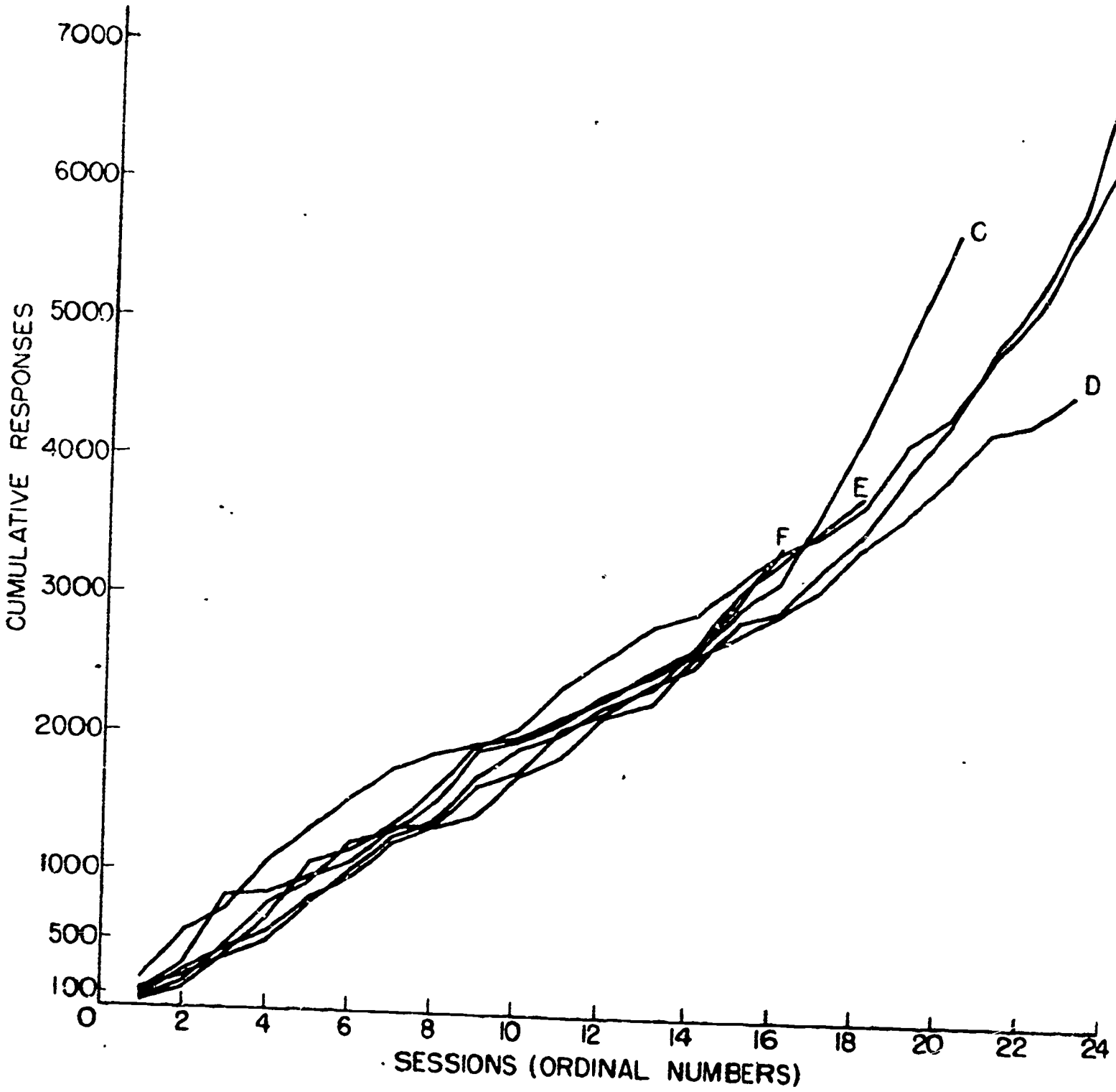

7000
6000
5000
4000
3000
2000
1000
500
100
0
CUMULATIVE RESPONSES
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)
A
B
C
D
E
F

Figure 2

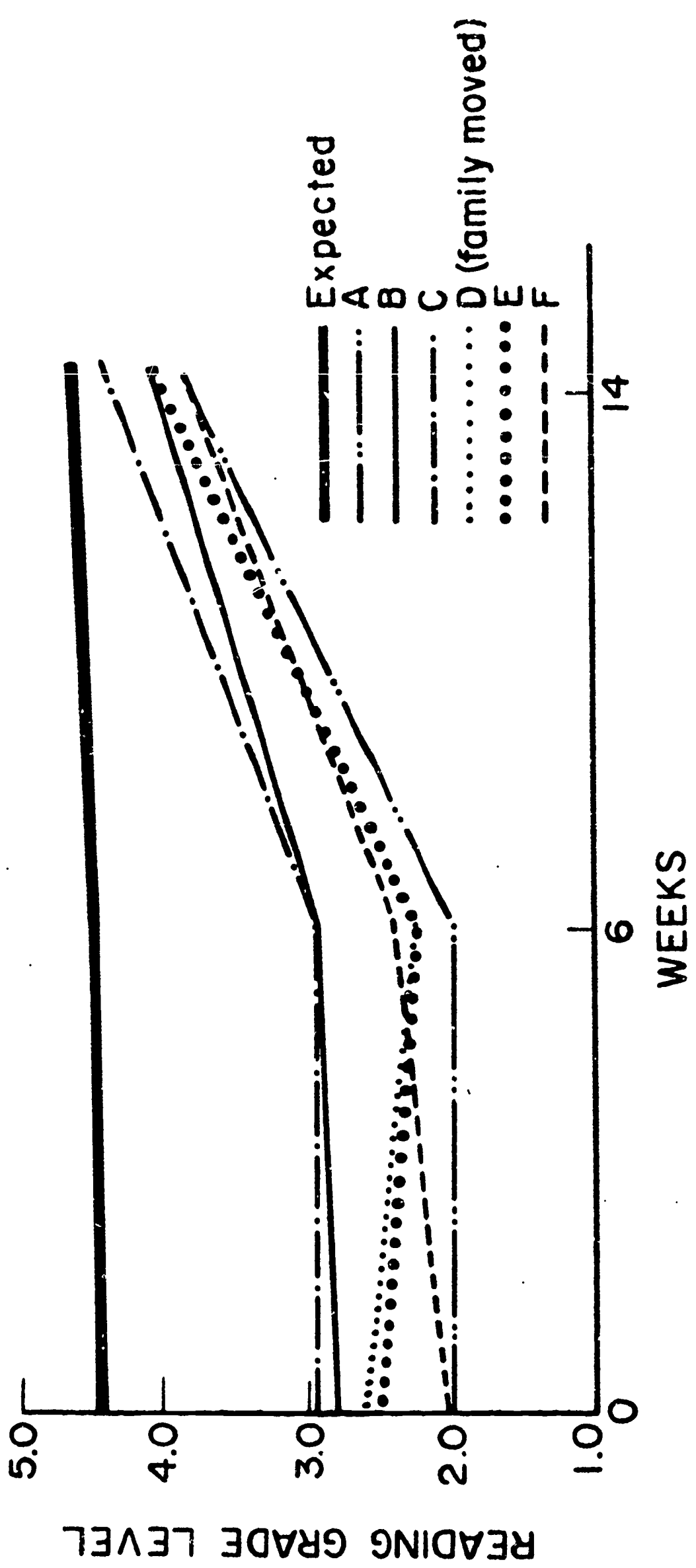
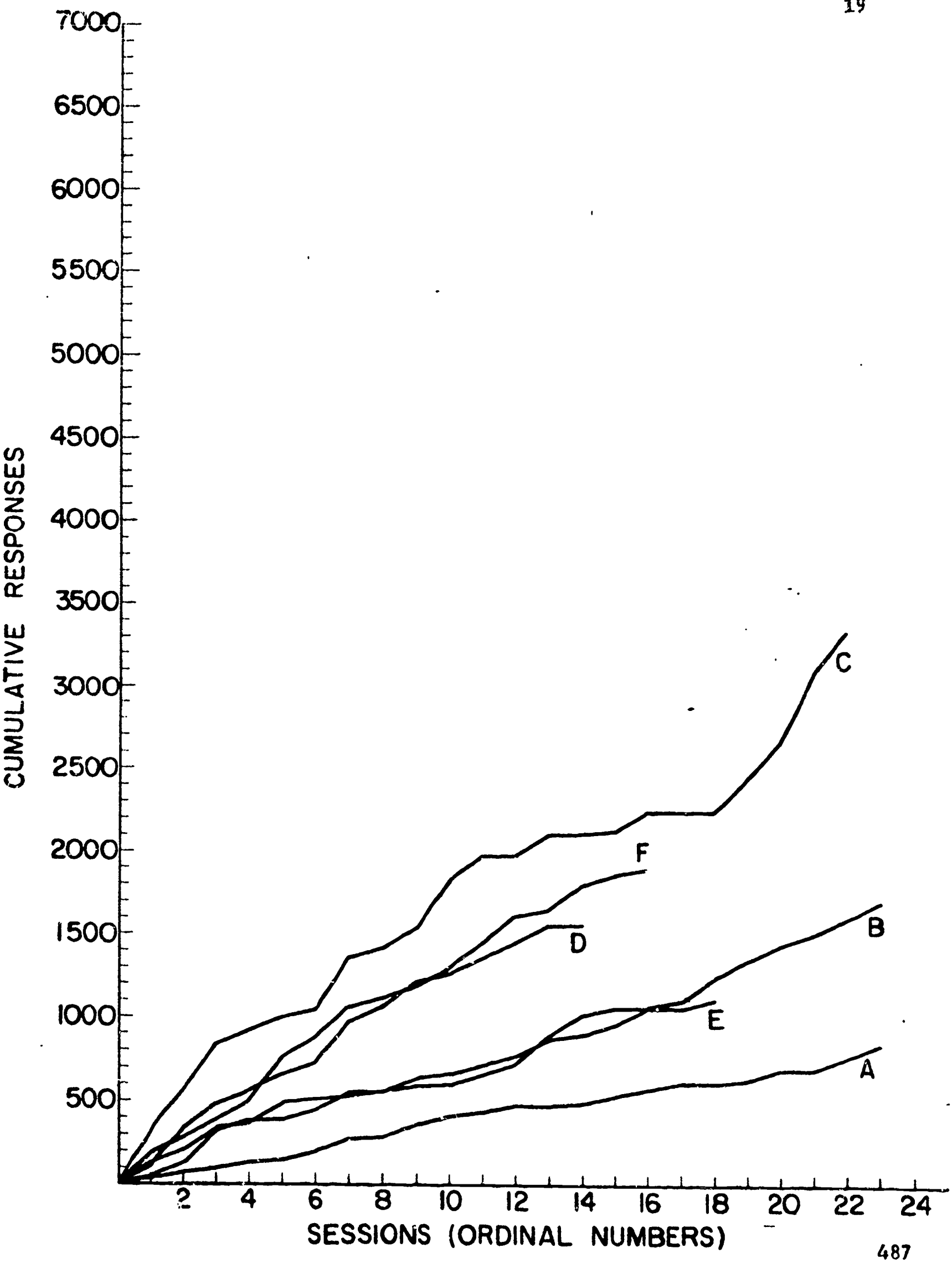

Expected
A
B
C
D (family moved)
E
F
READING GRADE LEVEL
5.0
4.0
3.0
2.0
1.0
0
6
14
WEEKS

Figure 2A


CUMULATIVE RESPONSES
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
C
F
D
B
E
A
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)

487

Figure 3

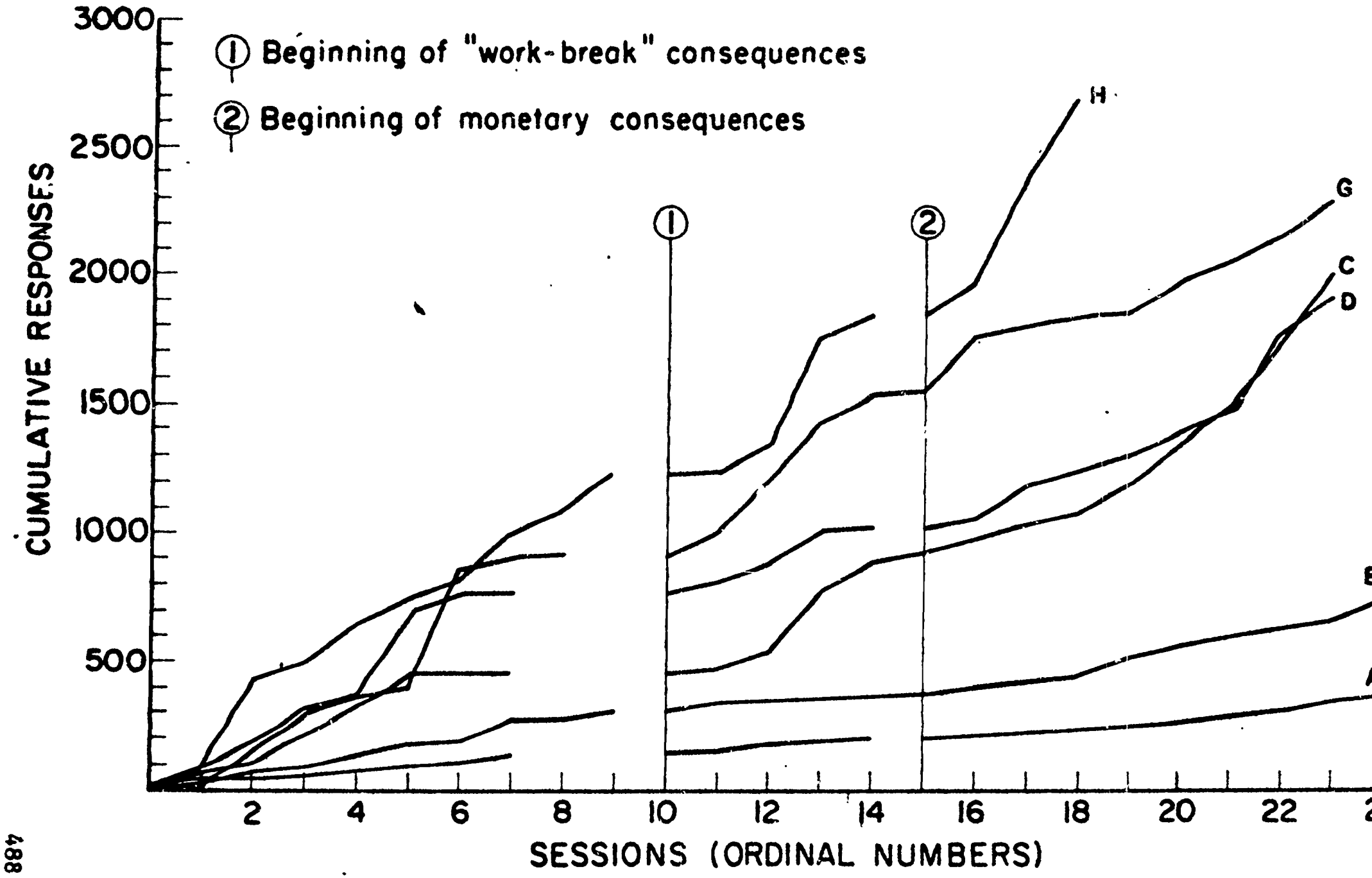

① Beginning of "work-break" consequences
② Beginning of monetary consequences
CUMULATIVE RESPONSES
3000
2500
2000
1500
1000
500
H
G
C
D
B
A
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)

Figure 4

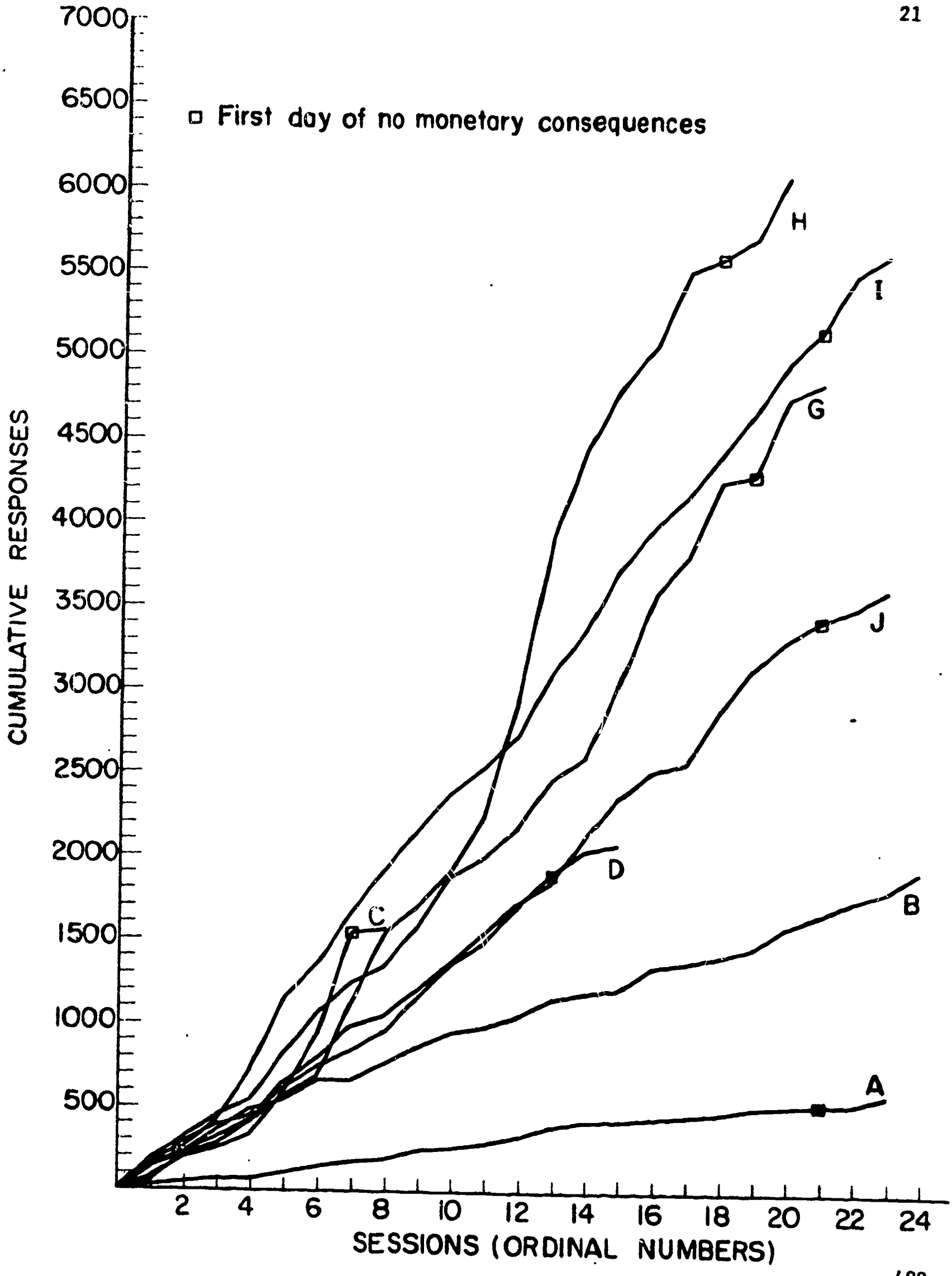

□ First day of no monetary consequences
CUMULATIVE RESPONSES
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
H
I
G
J
D
C
B
A
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)

Figure 5

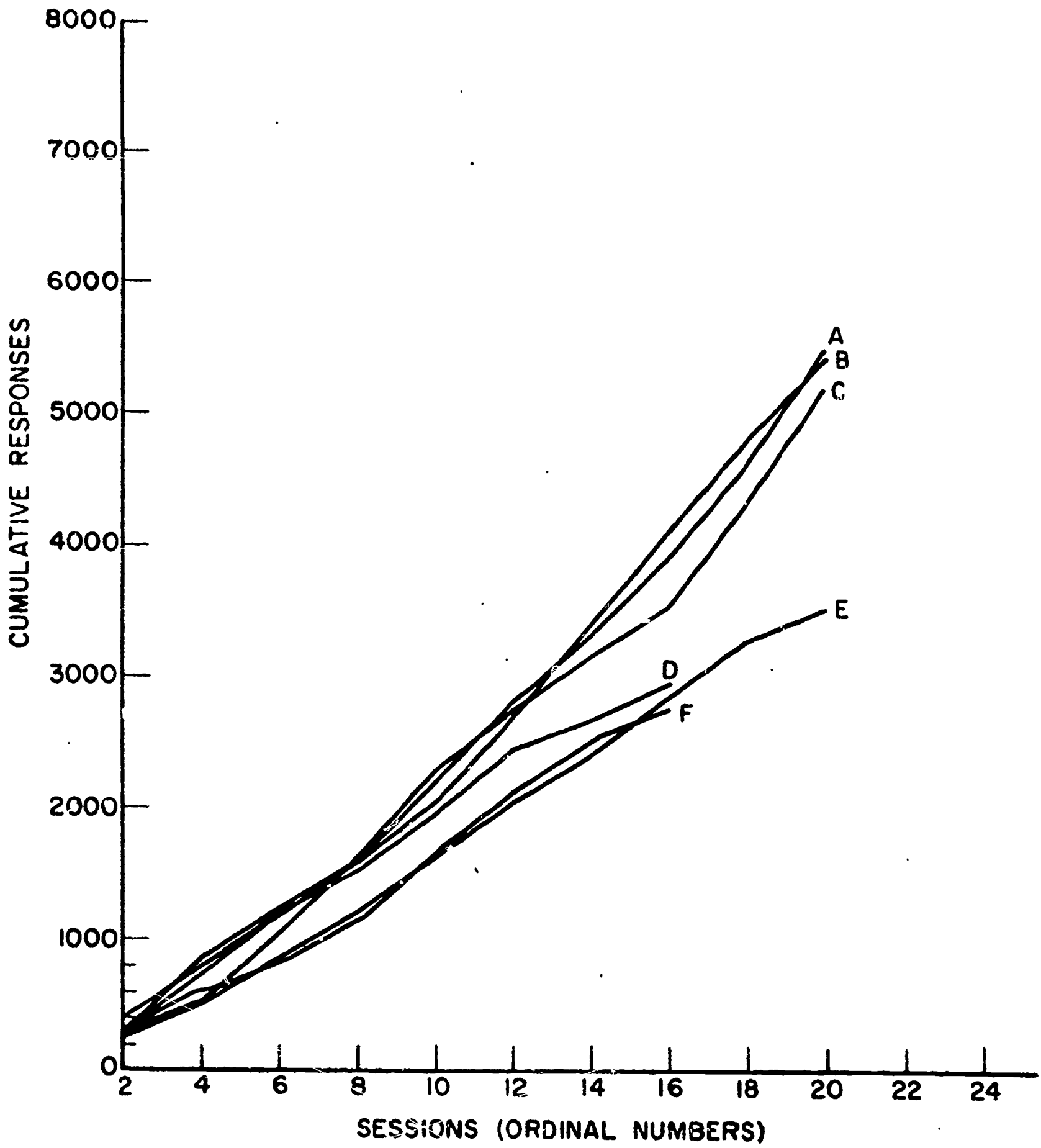

CUMULATIVE RESPONSES
8000
7000
6000
5000
4000
3000
2000
1000
0
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)
A
B
C
D
E
F

Figure 6

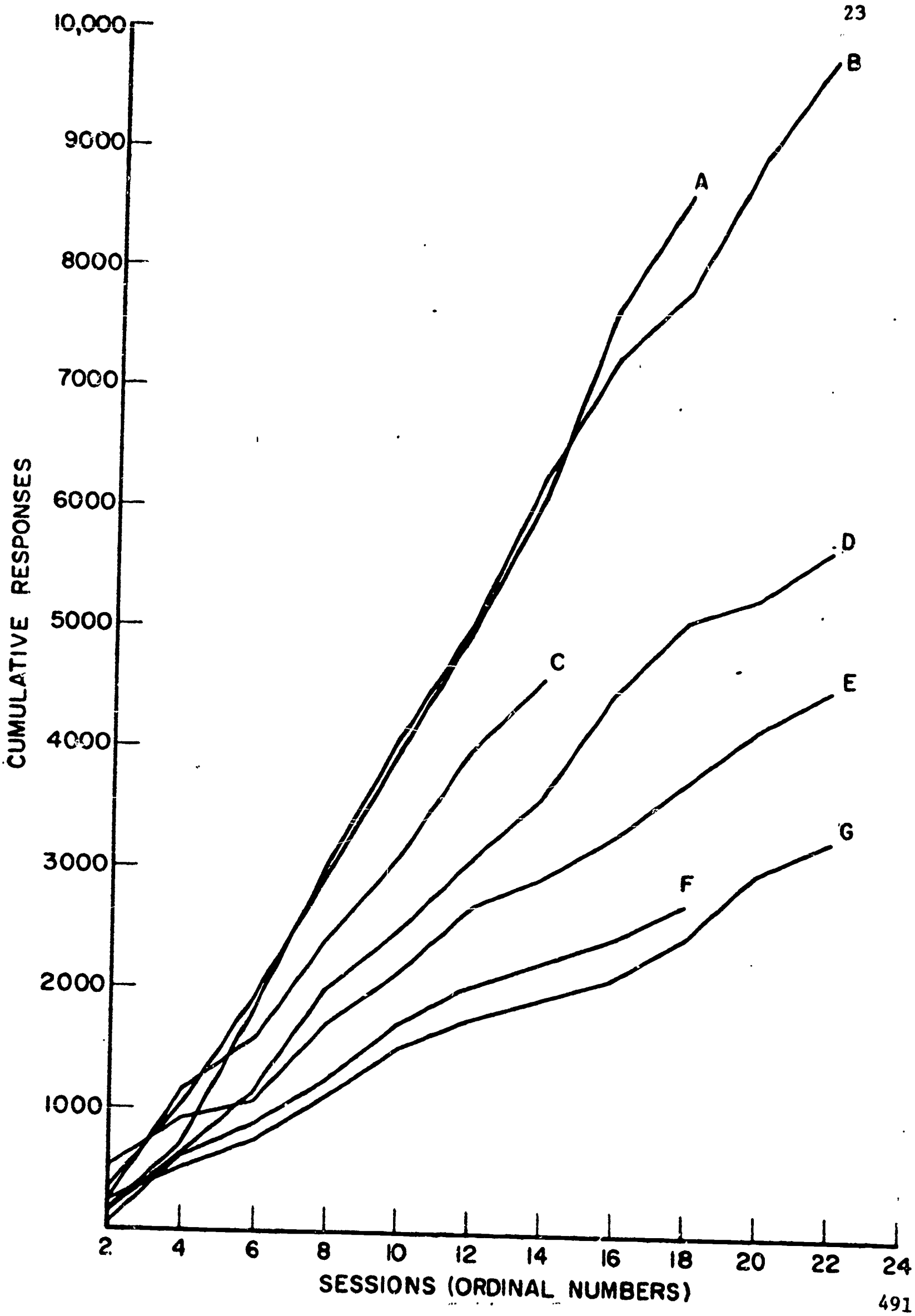

10,000
9000
8000
7000
6000
5000
4000
3000
2000
1000
CUMULATIVE RESPONSES
A
B
C
D
E
F
G
2
4
6
8
10
12
14
16
18
20
22
24
SESSIONS (ORDINAL NUMBERS)

Figure 7